Eurex Exchange’s T7

Eurex Trader GUI & Eurex Admin GUI –

Installation Manual

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1. Introduction

There are two graphical user interfaces for Eurex Exchange's T7:

- The Eurex Trader GUI which is used for On-exchange trading and EurexOTC Trade Entry services
- The Eurex Admin GUI which is used for trader maintenance, entitlement and transaction size limit settings

Both GUIs can be accessed via leased line connections (using a GUI-Channel) or alternatively through the Internet (native Internet connection). The new GUI solution relies on Oracle/Sun Java Web Start technology for delivery of the software to the participant. Once downloaded the new Eurex Trader GUI as well as the Eurex Admin GUI run independent from the web browser used to start the Java Web Start Process.

Please note: Internet connections require an additional security layer which requires the trading member to create SSH key pairs and to upload the public key to the Eurex Exchange before using the GUIs over an Internet connection.

1.1 Document structure

Chapter 1 of this document outlines the general technical concept and requirements on the client computer and the connecting network.

Chapter 2 gives an overview of the suggested Java Runtime Environment settings.

Chapter 3 outlines the configuration and log files which are kept locally on the client computer running the GUI.

Chapter 4 applies only to Internet connections and describes in detail several approaches to SSH key creation and the procedure to upload a created public key to the Member Section of http://www.eurexchange.com.

Chapter 5 summarizes a number of scenarios for testing and troubleshooting, together with links to further documentation.

1.2 Java Web Start Details

Java Web Start is part of the Java Runtime Environment (JRE) and is automatically installed together with the JRE package.

The Java Web Start mechanism ensures that a user is always using the latest version of a given Java software package without the need for installation or upgrade procedures.

Clicking on a Eurex GUI link on the Eurex website http://webgui.eurexchange.com/ downloads the latest version of either the Eurex Trader GUI or Eurex Admin GUI if required and starts it automatically.

Each version of the Eurex Trader GUI and Eurex Admin GUI will be stored on the local client PC in the local cache of Java Web Start. On each subsequent launch of the GUI the locally stored version will be compared with the latest version on the Eurex Exchange servers. If a newer version is available this newer version will be downloaded and launched, otherwise the locally stored version is used.

Please Note: In order to guarantee that Participants are always using the latest software versions of the Eurex Trader GUI and Eurex Admin GUI, from release 2.1 onwards trader logins from all outdated GUI instances will be rejected and a link to the appropriate landing page will be provided. In this way the compatibility between the T7 backend and T7 GUI components is ensured.

1.3 Client PC requirements

The Eurex Trader GUI and Eurex Admin GUI require a Java Plugin (JRE) on the client computer. Furthermore the end-user of the Eurex Trader GUI or Eurex Admin GUI needs access rights to the local Java Plugin (e.g. Plugin cache).

To access the initial website a standard internet browser is required. The browser must support the Java Plugin (JRE) available at https://www.java.com/en/download/index.jsp

The following browsers were tested:

- MS Internet Explorer 8
- Mozilla Firefox 10
- Opera 11

Other standard browsers were not tested but are considered to be possible.

1.3.1 Operating system

Eurex only supports the following operating systems which have been tested together with the Eurex Trader GUI and Eurex Admin GUI:

- MS Windows (32-bit), x86 (Windows 7, XP)
- MS Windows (64-bit), x64 (Windows 7, XP)
- Linux (32-bit), x86, (Red Hat Enterprise Linux 6.2)
- Linux (64-bit), x64, (Red Hat Enterprise Linux 6.2)
- Oracle Solaris, Sparc, (5.10)
- Oracle Solaris, x64, (5.10)

Other operating systems are considered to be possible as long as they are compatible with the required Java Runtime Environment.

Following the announcement from Microsoft that support and updates for the Windows XP operating system will no longer be available from 08. April 2014 onwards, the T7 Trader and Admin GUI in conjunction with the Windows XP operating system will not be supported any longer from Eurex T7 release 2.5 (Q4/2014). From this point forward, the Windows XP operating system will only be classified as a possible solution.

1.3.2 Hardware

Recommended requirements for desktop computers running one new Eurex Trader GUI and/or one new Eurex Admin GUI:

- A computer capable of running the above listed operating systems and Java Runtime Environment with at least 2 GB memory and a dual-core processer that runs at least with 2 GHz.

Display server solutions (i.e. Citrix, Tarantella) were not tested, but are considered to be possible.

1.4 Java Runtime Environment (JRE)

The following versions of the Java Virtual Machine are supported and need to be present on the client computer:

- Minimum: JRE by Oracle, version 1.7.0_45 or newer 1.7_x version
- Recommended: JRE by Oracle, version 1.7.0_51 or newer

Please note: JRE by Oracle, version 1.7.0_25 has known limitations leading to unexpected issues running the T7 Admin or T7 Trader GUI. Therefore it is advisable to avoid version 1.7.0_25 to run the T7 Admin or T7 Trader GUI.

From T7 release 2.1 onwards JRE 1.6 versions are **no longer supported** and are also not available possible solution. The T7 GUIs make use of features only provided with Java 1.7. Please be aware that Oracle also terminated support for all 1.6 versions in February 2013:

http://www.oracle.com/technetwork/java/eol-135779.html

The required JRE version can be downloaded from:

- http://www.java.com/

1.5 Network

The connection to the Eurex Exchange can be made through the Internet, with or without a proxy server (with or without authentication) or over a leased line (dedicated network connection to the Eurex Exchange back end network).

Per concurrent Eurex Trader GUI bandwidth consumption approximately 330 Kbit/s has to be expected. Bandwidth usage is mainly driven by market data updates and depends on the selected instrument profile. As the new Eurex Admin GUI does not receive any market data the bandwidth requirement of the Eurex Admin GUI is considerably lower (can be neglected).

Currently offered bandwidth options for GUI channels on leased lines:

1 Mbit	~	estimated for 3 Eurex Trader GUIs
3 Mbit	~	estimated for 10 Eurex Trader GUIs
5 Mbit	~	estimated for 15 Eurex Trader GUIs
10 Mbit	~	estimated for 30 Eurex Trader GUIs
40 Mbit	~	estimated for 120 Eurex Trader GUIs

To start the Eurex Admin GUI or the Eurex Trader GUI and to initiate the Java Web Start process a standard web browser should be used to navigate to a landing page which can be reached by the following URL address:

Connection option	URL / IP address Landing Page	Ports	Protocol
Internet	http://webgui.eurexchange.com/	80	TCP/IP
Leased line	http://193.29.93.173/	80	TCP/IP

Clicking one of the GUI links will initiate the Java Web Start mechanism which will download the GUI in form of a JAR file from the Web Start server. Java Web Start will verify if the current version of the GUI is already present in the local cache of the participant's client computer.

If the latest version has already been downloaded during a previous launch, the cached version is used with no download being necessary. If a newer version is available on the Web Start server, it will be downloaded automatically and stored in the local Java Web Start cache to be used in the future.

Browsing to the launch page and transferring the JAR file via Web Start is based on TCP/IP on port 80 or port 443, SSL (for future use). To serve that purpose, two sets of Java Web Start servers are used: one for Internet and one for leased line connections.

Connection option	URL / IP address Java Web Start Server	Ports	Protocol
Internet	193.29.90.190	80 / 443	TCP/IP
Leased line	193.29.93.173	80 / 443	TCP/IP

Please note: usage of port 443 (SSL) is planned for a future release and not active yet.

As soon as the download of the JAR file has been completed or the most recent version has been found in the local cache, it will be started from the local Java Virtual Machine (JVM).

Once the GUI application has been started within the local Java Virtual Machine the network communication between the client computer and the receiving proxy servers at Eurex Exchange will be done on the ports listed below.

Environment	Connection option	Proxy IP subnets	Ports	Protocol
Production	Internet	193.29.90.192/27	Port 80 for both GUIs.	TCP/IP
	Leased line A Leased line B	193.29.91.224/28 193.29.93.224/28	Port 80 for the Eurex Admin GUI and port 8089 for the Eurex Trader GUI.	TCP/IP
Simulation	Internet	193.29.90.224/27	Port 80 for both GUIs.	TCP/IP
	Leased line A Leased line B	193.29.89.224/28 193.29.95.224/28	Port 80 for the Eurex Admin GUI and port	TCP/IP

Environment	Connection option	Proxy IP subnets	Ports	Protocol
			8089 for the Eurex Trader GUI.	

If a firewall is in place, the ports listed above need to be configured. All connections will be opened only from the client side to the Eurex Exchange. Please note that traffic over the Internet will be encrypted. Although port 80 is being used, firewalls will not be able to read the content (payload) of the TCP/IP packets sent on this port.

1.5.1 Leased line network aspects

For leased lines connections the outbound TCP/IP address for GUI connections is expected to be within the assigned member LAN.

The technical implementation can be performed by placing a proxy server in the member LAN, taking on one side the connections to the trading desks and on the other side residing in the assigned member LAN.

Alternatively NAT'ing (static or dynamic) protocols can be implemented in the trading participant's network to shield the in-house network addresses and translate them to addresses in the assigned member LAN.

Routes to the leased line networks listed in the table above need to be present on the client computer. Please note that these should point to the leased lines and not to the Internet.

If present, local Internet proxy servers should implement an exception to access the leased line networks. This can be configured in .pac files of most proxy servers by commanding direct connections to the specified network/host:

```
if ( isInNet( host, "193.29.93.173", "255.255.255.255" ))
{return "DIRECT";}
```

For leased line connections SSH authentication is not required or possible.

1.5.2 Internet connections aspects, public key pair authentication

GUI connections established over the Internet require an additional security level for encryption and authentication.

An SSH-2 key pair has to be created and the public key has to be uploaded to Eurex Exchange via the web portal in the Member Section of http://www.eurexchange.com. Please see chapter 3 for detailed instructions on how to create an SSH key pair and how to upload the public key.

The SSH key pair is used just for authentication. The Eurex GUI solutions do not establish an SSH tunnel, but encrypt the payload of the network packets on application level.

1.5.3 Local proxy servers

Customers may deploy their own proxy servers for connection via Internet or via leased lines.

The following general proxy server requirements are needed for running the Eurex Admin or Eurex Trader GUI via proxy:

- proxy must accept „HTTP 1.1"
- proxy must understand header „Proxy-Connection" and „Connect" with value „keep-alive"
- proxy must understand header „Transfer-Encoding" with value „chunked"

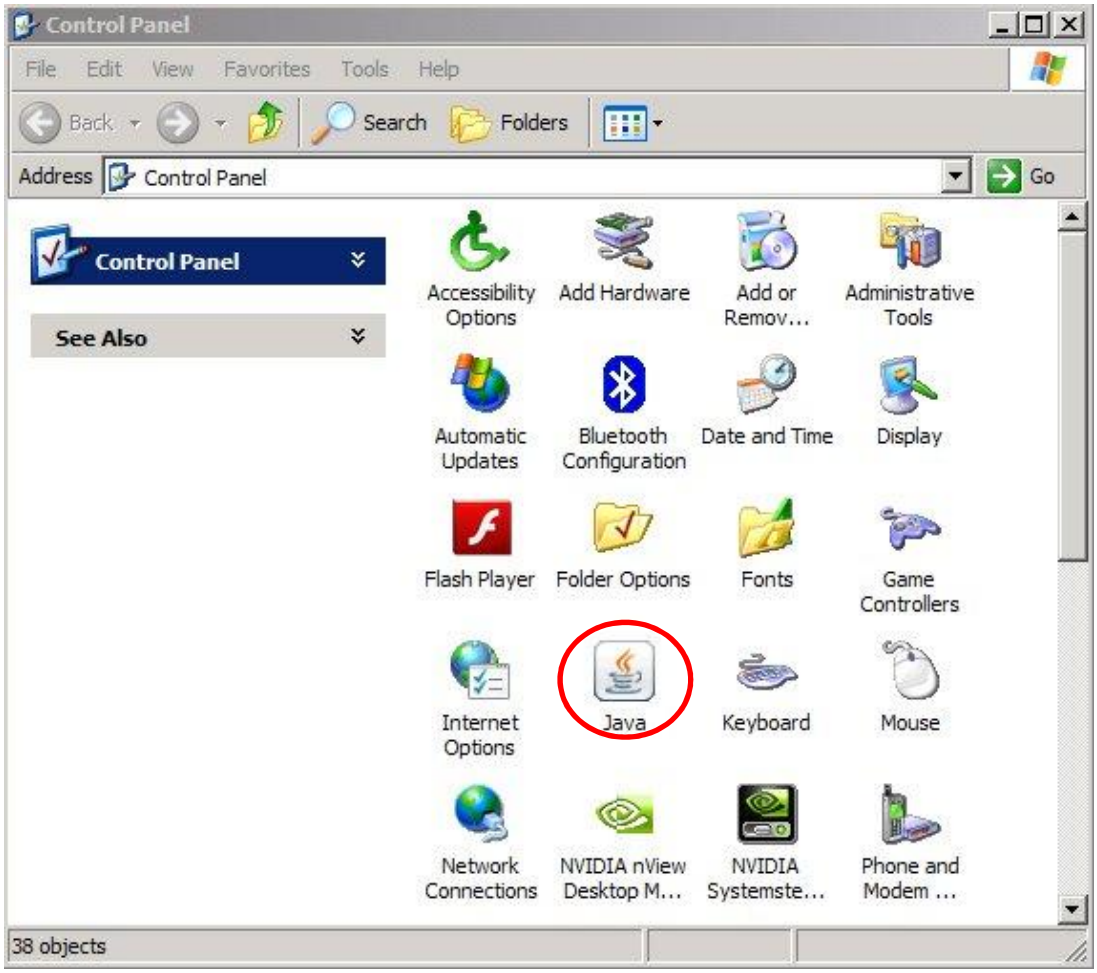
Known proxy server versions and limitations

- commercial proxy **BlueCoat**
  - Version SGOS 4.3, 5.4, 5.5 and 6.x known to be good
  - Version SGOS 4.2 known to be not working (End of live was 2010 according to BlueCoat)

- Open Source proxy **Squid**
  - Version 3.2.x or newer known to be good
  - (note Squid 3.2 STABLE exists only for Unix/Linux. Windows just at 2.7 STABLE)
  - Incoming port must be configured for http11 in squid.conf

2. Java Plugin Settings on the local computer

To access the Java Control Panel open the Control Panel on a MS Windows based computer.



Double click the icon „Java" to open the plugin settings. If the icon is missing, the plugin is not correctly installed.

For Linux based computers open the Java settings by selecting "Preferences" / "Java" – depending on the installed desktop environment.

The following window should open (or similar, depending on operating system used):

Java Control Panel
General
Java
Security
Advanced
About
View version information about Java Control Panel.
About...
Network Settings
Network settings are used when making Internet connections. By default, Java will use the network settings in your web browser. Only advanced users should modify these settings.
Network Settings...
Temporary Internet Files
Files you use in Java applications are stored in a special folder for quick execution later. Only advanced users should delete files or modify these settings.
Settings...
View...
Java in the browser is enabled.
See the Security tab
OK
Cancel
Apply

The Java plugin version can be verified with a click on „About…":

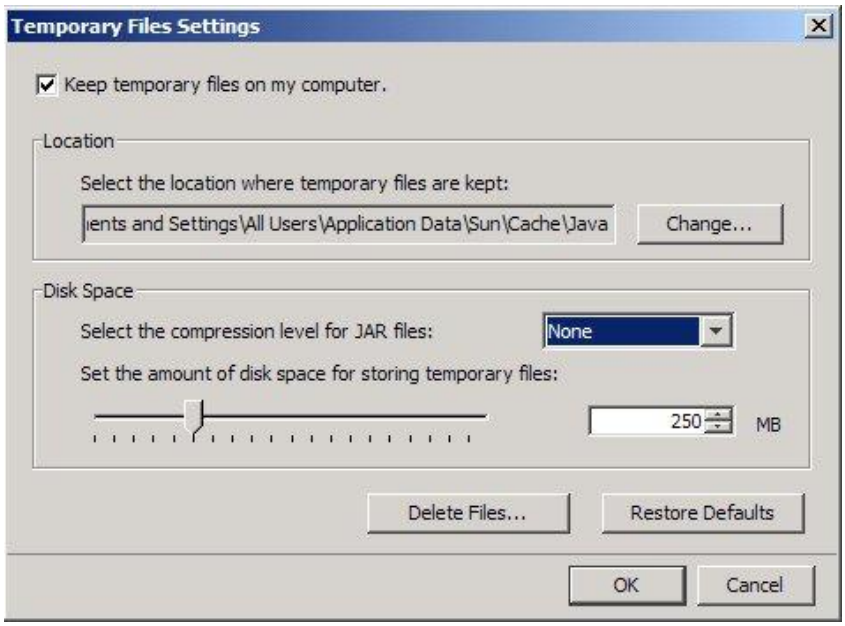
About Java
Java™
Standard Edition
Version 7 Update 45 (build 1.7.0_45-b18)
Copyright (c) 2013, Oracle and/or its affiliates. All rights reserved.
For more information about Java technology and to explore great Java applications, visit http://www.java.com
ORACLE

The version should be 1.7.0_45 or higher. From T7 release 2.1 **Java 1.6 is no longer supported or possible.**

Open the network settings with a click on "Network Settings…":

These settings are specific for your infrastructure. Normally you can use the settings from your internet browser (for Internet Explorer: Tools -> Internet Options -> Connections -> LAN Settings).

Open the settings for temporary internet files with a click on "Settings…"



It is recommended to reserve sufficient disk space (at least 100MB) for the temporary files on the local computer. The JAR files of the Eurex Admin GUI and Eurex Trading GUI will be less than 20MB per version. Disabling disk space for temporary files on the local computer will require Java Web Start to download the Eurex GUI applications with each start of the application.

The end-user of the Eurex GUI applications must have read and write access to the temporary files location. If you encounter problems with the download, please try to clear the cache (Button "Delete Files…") and download the application again.

3. Local files

Both, the Eurex Trader GUI and the Eurex Admin GUI store setup information and log files on the local client computer. Administrators are advised to keep these files on local disc storage and not on network mounts to avoid adverse effects of network delays.

3.1 Directory structure

The default location for these files is in the operating system user's home directory in a sub folder "gmc" (working directory)

~/gmc

C:\users\<user>\gmc

Within this folder sub folders for **`production`** and **`simulation`** are created. Each folder contains another folder "etc" for the GUI configuration (settings directory) and a folder "log" for the GUI log files (log directory).

3.2 Changing directories

All three directory paths stated above can easily be changed by the use of operating system environment variables:

Directory	Environment Variable	Default
Working directory	GMC_WORKING_DIR	~/gmc/<environment>
Settings directory	GMC_SETTINS_DIR	~/<GMC_WORKING_DIR>/<environment>/etc
Log directory	GMC_LOG_DIR	~/<GMC_WORKING_DIR>/<environment>/log

Example, MS Windows:

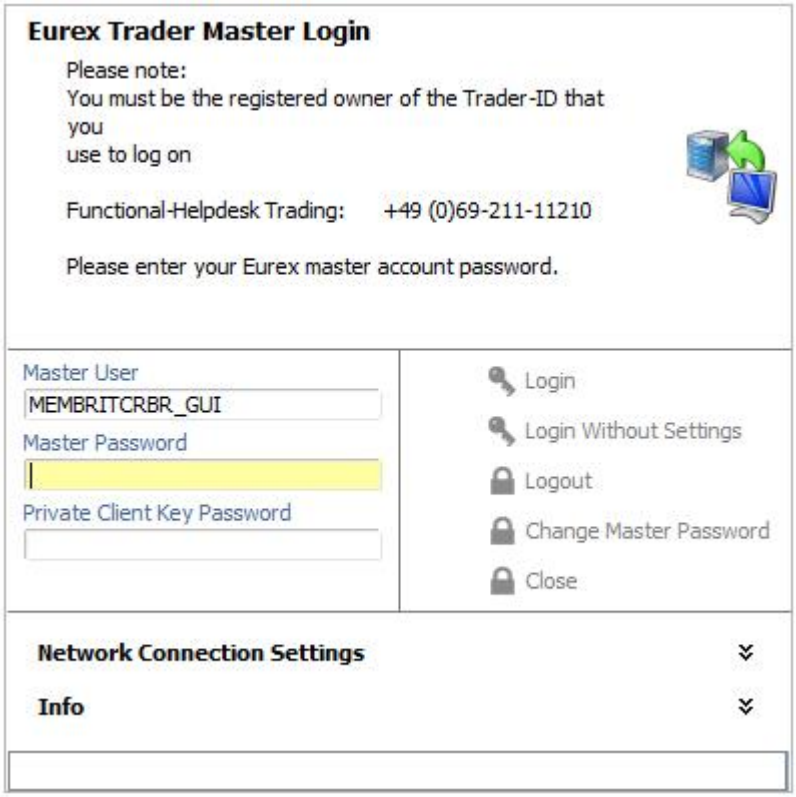
```
SET GMC_WORKING_DIR=N:\home\gmc\
ECHO %GMC_WORKING_DIR%
```

Example, UNIX (bash)

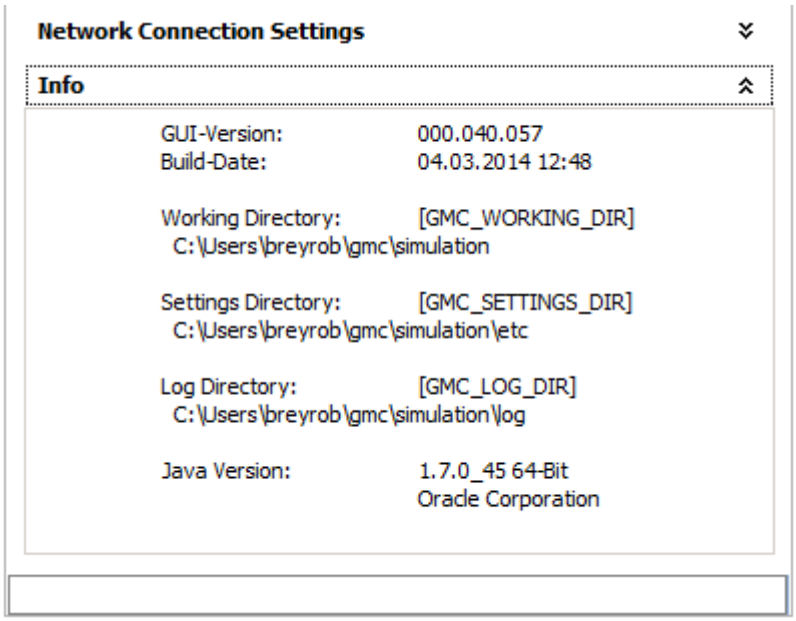
```
export GMC_WORKING_DIR=\mount\home\gmc
echo $GMC_WORKING_DIR
```

3.3 Verify local settings

Local settings can easily be verified within the GUI itself. Open a Login view and click on the blue "Info" bar at the bottom of the window:



The window will expand and display a list of the settings currently used by the GUI store and read files in the client computer's file system:



4. SSH key pair generation

The following chapter applies only for customers who intend to run the Eurex Trader GUI or Eurex Admin GUI via the native Internet. GUI connections over leased lines do not require any SSH key pair authentication.

To generate an SSH-2 public/private key various freeware tools are available for download in the Internet, for instance:

- PuTTYgen.exe (available for MS Windows),
- ssh-keygen from http://www.openssh.org for various operating systems.

The key generation process will produce both the public and the private key.

Key pairs can be created either for an entire business unit or for individual traders. Key generation for both options is identical. The use of the keys (business unit vs. individual traders) is determined during upload into the Member Section as outlined in chapter 3.4.

To help associate keys with business unit or individual member IDs it is suggested to use corresponding filenames as indicated in the examples below.

IMPORTANT: Each key private must be protected with a passphrase. This is mandatory for the Eurex T7 simulation and for production environments.

4.1 Private and public key with OpenSSH (ssh-keygen)

After installing OpenSSH type the following command on the command line to create both, a public and a private key (in this example with the minimum length of 2048 bytes):

```
      $ ssh-keygen -t rsa -b 2048 -N <passphrase> -f /home/username/.ssh/
MEMBRTRD001

Generating public/private rsa key pair.
Your identification has been saved in /home/username/.ssh/ MEMBRTRD001.
Your public key has been saved in /home/username/.ssh/ MEMBRTRD001.pub.
The key fingerprint is:
f8:e9:1a:ee:a0:d7:2b:4a:8e:fa:4d:80:43:e0:96:1a username@host.domain.de
The key's randomart image is:
+--[ RSA 2048]----+
|.                |
|o .              |
|E=               |
|+o     .         |
|+ .   . S        |
| . .   . .       |
|  . o.. o        |
| + +oo.o         |
|+.=o.o=o.        |
+-----------------+
```

The following keys will be created:

```
      $ ls -al MEMBR*

-rw------- 1 username group 1675 Jul 17 16:28 MEMBRTRD001
-rw-r--r-- 1 username group  405 Jul 17 16:28 MEMBRTRD001.pub
```

The public key can be identified by the file extension ".pub", while the private key has no file extension. Please note the different file access rules for both keys.

The private key file must be accessible from the GUI user's workstation, but should never be distributed further.

Alternatively the tool ssh-keygen can be used in an interactive session:

```
      $ ssh-keygen -t rsa -b 2048

Generating public/private rsa key pair.
Enter file in which to save the key (/home/username/.ssh/id_rsa):
/home/username/.ssh/MEMBRTRD002
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/username/.ssh/MEMBRTRD002.
Your public key has been saved in /home/username/.ssh/MEMBRTRD002.pub.
The key fingerprint is:
17:0f:1c:7b:67:bc:34:6f:a6:52:7c:4b:7e:d7:16:8e username@host.domain.de
The key's randomart image is:
+--[ RSA 2048]----+
|          .      |
|         . o .   |
|          = . *  |
|           = = + |
|        S . . +o=|
|         .   .==+|
|            .E.+=|
|             . .o|
|                 |
+-----------------+
```

The following keys will be created:

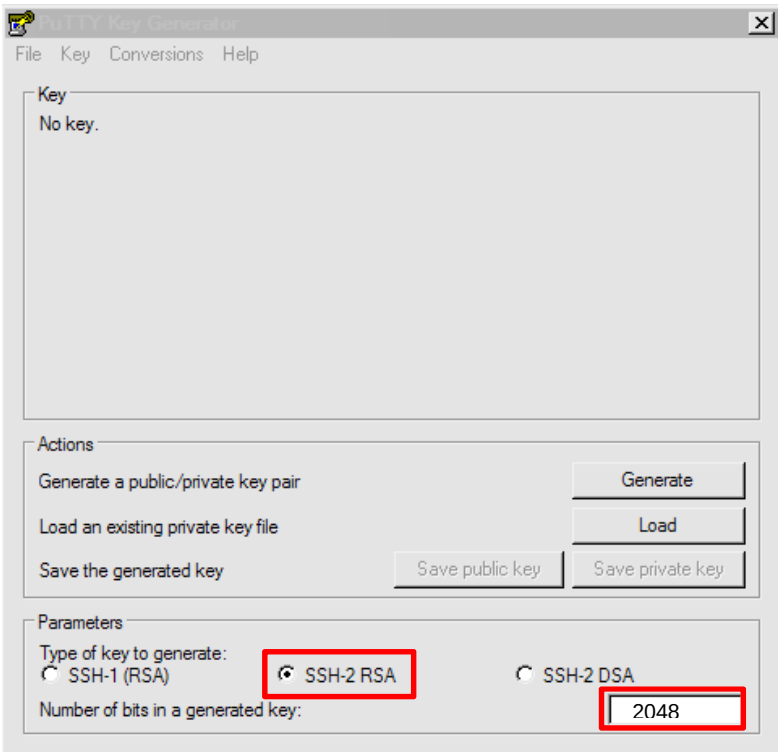
```
      $ ls -al MEMBR*

-rw------- 1 username group 1743 Jul 17 16:30 MEMBRTRD002
-rw-r--r-- 1 username group  405 Jul 17 16:30 MEMBRTRD002.pub
```

The public key can be identified by the file extension ".pub", while the private key has no file extension. Please note the different file access rules for both keys.

The private key file must be accessible from the GUI user's workstation, but should never be distributed further.

4.2 Key generation with puttygen

The following chapter describes the key generation procedure with puttygen.exe under MS Windows. After starting PuTTY Key Generator (run "puttygen.exe") there will be an almost empty PuTTY Key Generator screen visible.

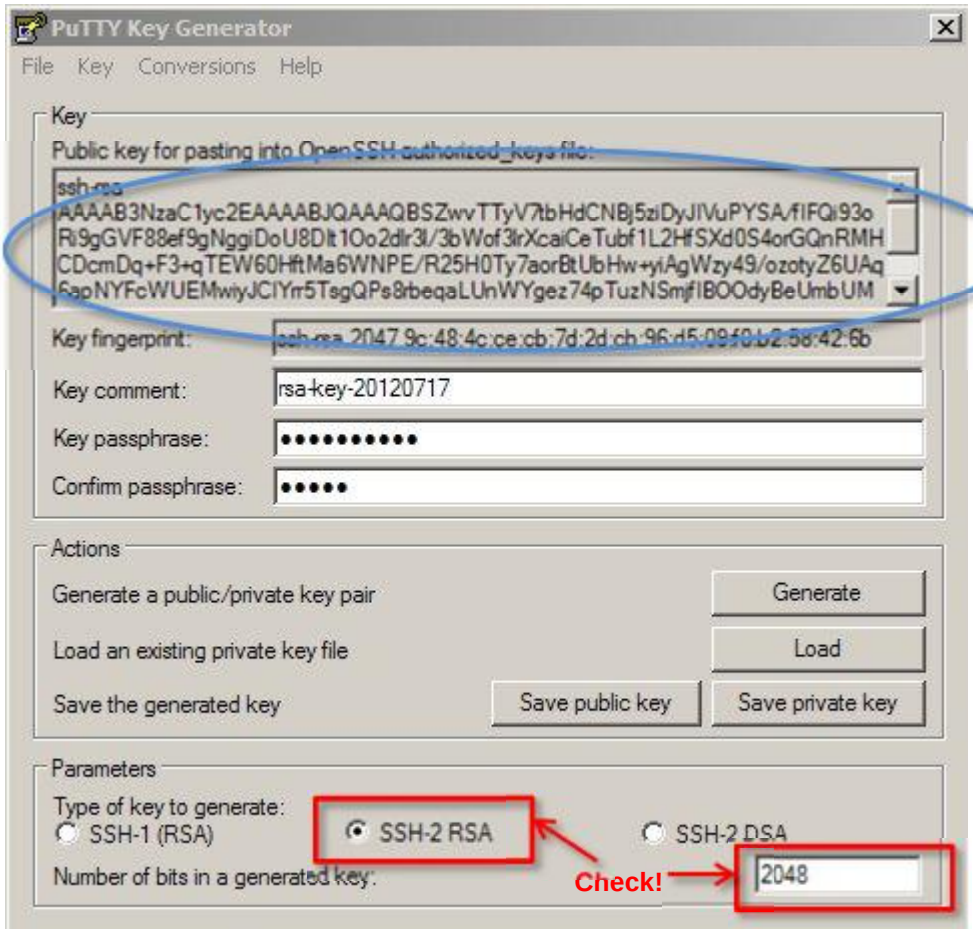


Parameters:

- Type of key to be generated: **SSH-2 RSA**
- Number of bits in a generated key: **2048** (up to 16384)

Once the parameters are set, click on "Generate" and move your mouse pointer for a while over the blank area. The key pair will be generated.

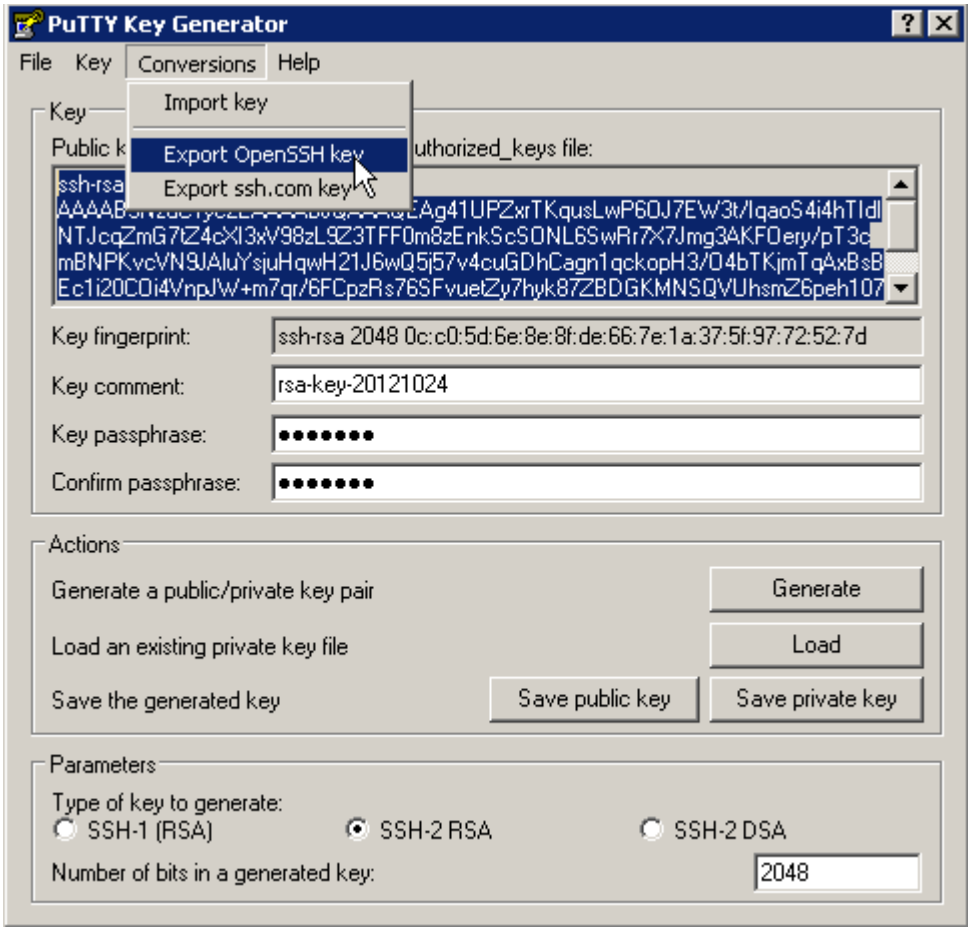
IMPORTANT: Each key private must be protected with a passphrase. This is mandatory for both the Eurex T7 simulation and for production environments.



To save the public key, select the key in the textbox with the mouse. Make sure that you have selected the full key. This may require scrolling. Copy the selected key to the clipboard (CTRL-C). Open a text editor, i.e. "Notepad" or "Editor" and paste (CTRL-V) the key into the editor. Save the file as the public key.

The public key needs to be uploaded to the Member Section of the Eurex Exchange website. The process is described in the next chapter.

To save the private key, click on "Conversion" in the menu bar of PuTTYgen and select "Export OpenSSH key".



Both keys are required to run the Eurex Admin GUI or Eurex Trader GUI over the internet.

Please note: Both key files must be accessible from the GUI user's workstation, but should never be distributed further.

4.3 Public key – Member Section upload

The public key created as outlined above needs to be uploaded to the Member Section of http://www.eurexchange.com. The user uploading public keys needs to be a registered "Technical User Administrator".

From there it will be transferred to the proxy servers for GUI usage via Internet. An uploaded key will be usable within one hour after successful upload.

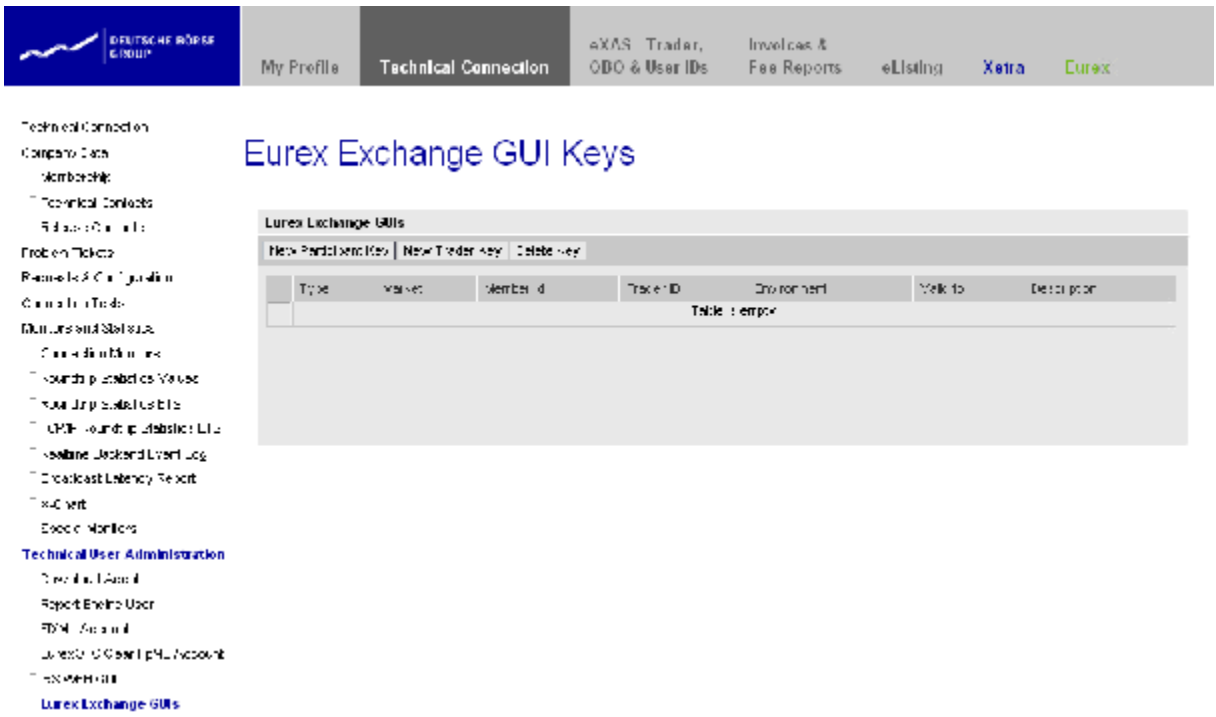
Keys can be created either for the entire business unit or for individual traders.

Please note: Uploading a new key for a trader or a business unit overwrites any previously uploaded key.

Before the Eurex Admin GUI or Eurex Trader GUI can be accessed via the Internet, the public key has to be uploaded in the DBAG Member Section This task can be performed by the technical user administrator. Follow the path below to reach the Eurex Trader GUI and Eurex Admin GUI key upload page.

DBAG Member Section-> Technical Connection-> Technical User Administration-> Eurex Exchange GUIs

The path above will take you to the Eurex Exchange GUI Keys page:

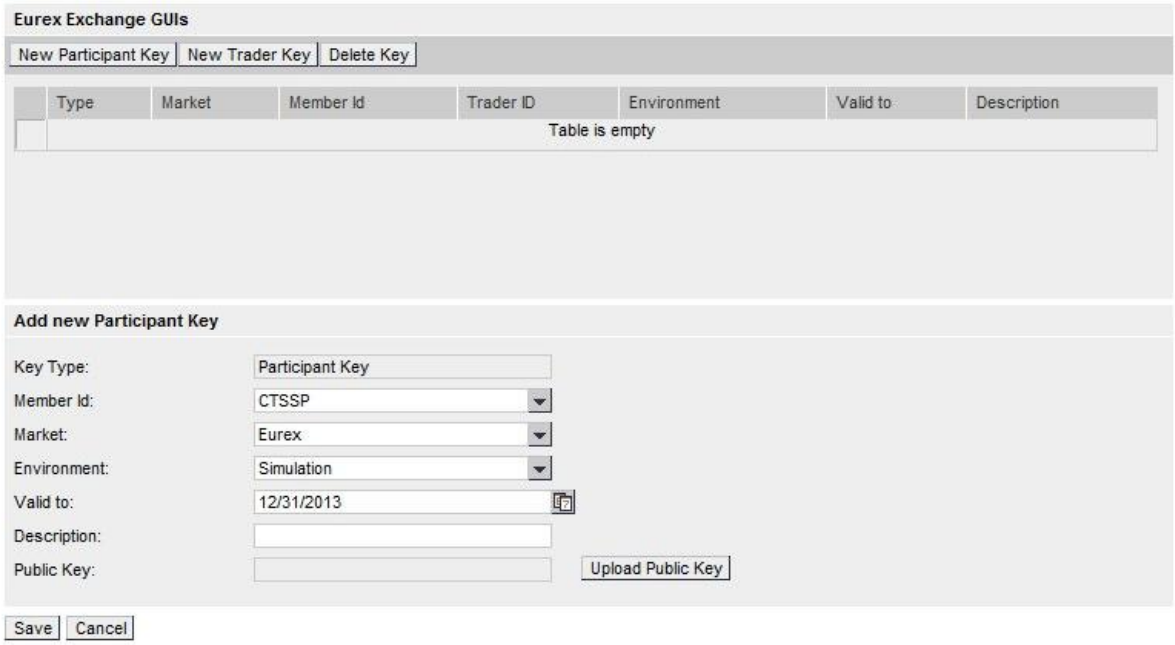


Public keys can be uploaded and registered either for a whole business unit where every trader uses the same key or individually for every trader individually.

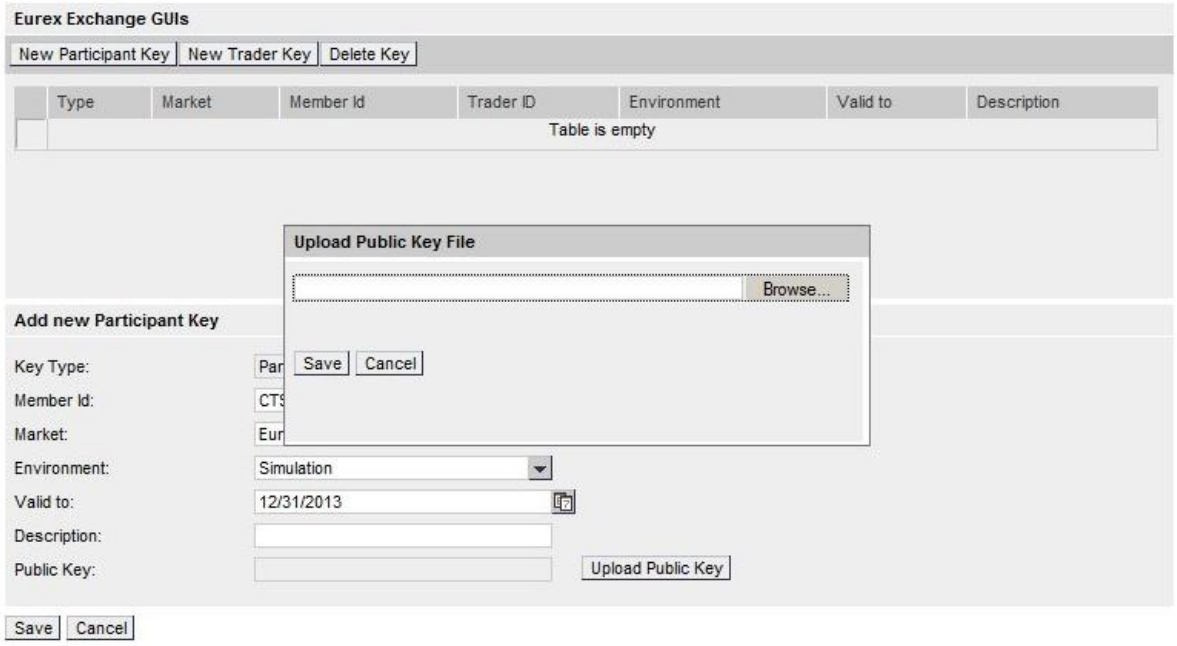
4.3.1 New Participant Key

Click on "New Participant Key" to upload a key which will be used by all traders of a given business unit. Select the Member ID/Business unit, the desired market (Eurex), the environment (production/simulation) and choose an expiration date.

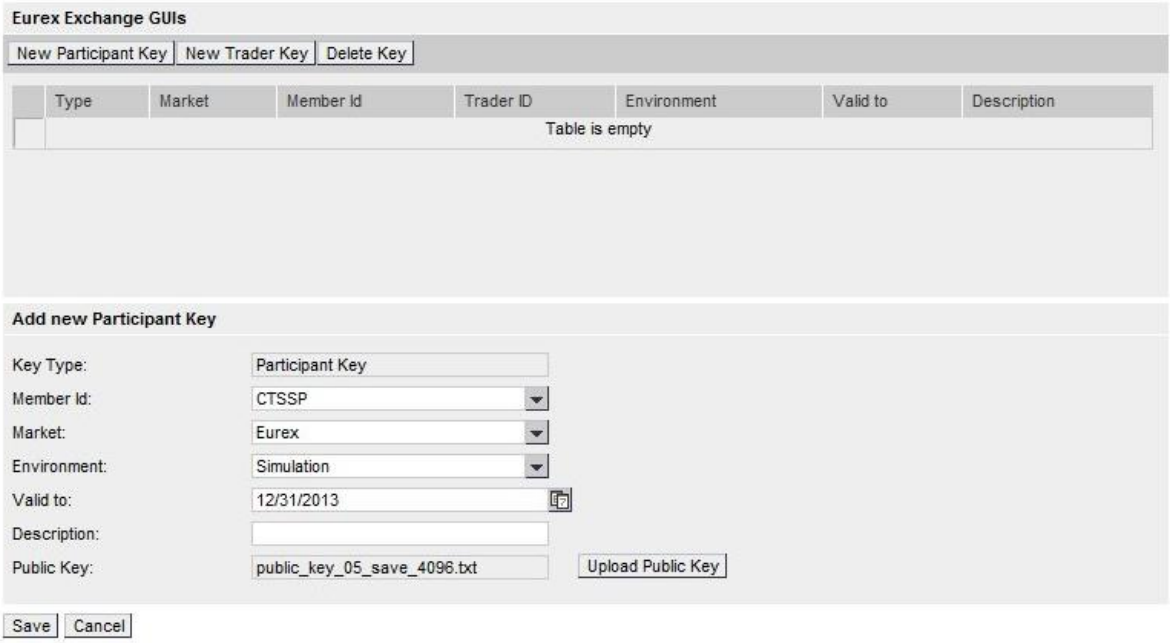
Expired keys will be deleted at the expiry date. Expiry dates can be modified at any time prior to expiry. Additionally an optional text description can be added.



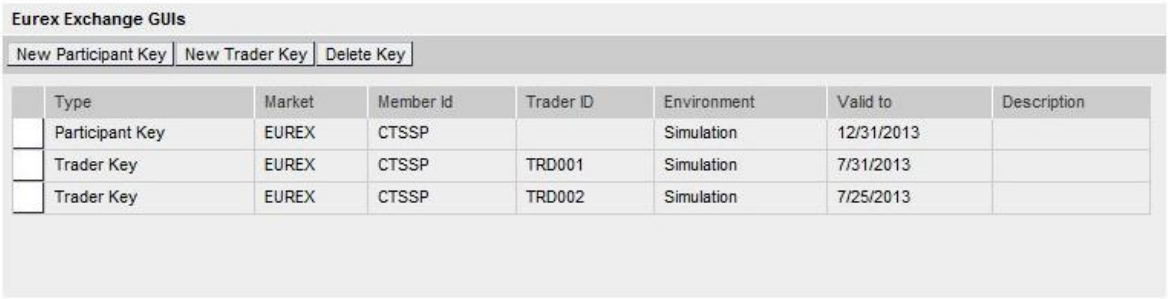
Then click on the "Upload Public Key" button. In the popup window select "Browse…" and navigate to the public key file you have created previously.



Click on "Save" to close the popup window.



Click on "Save" to complete the key upload. The screen will return to show a list of all already uploaded keys.



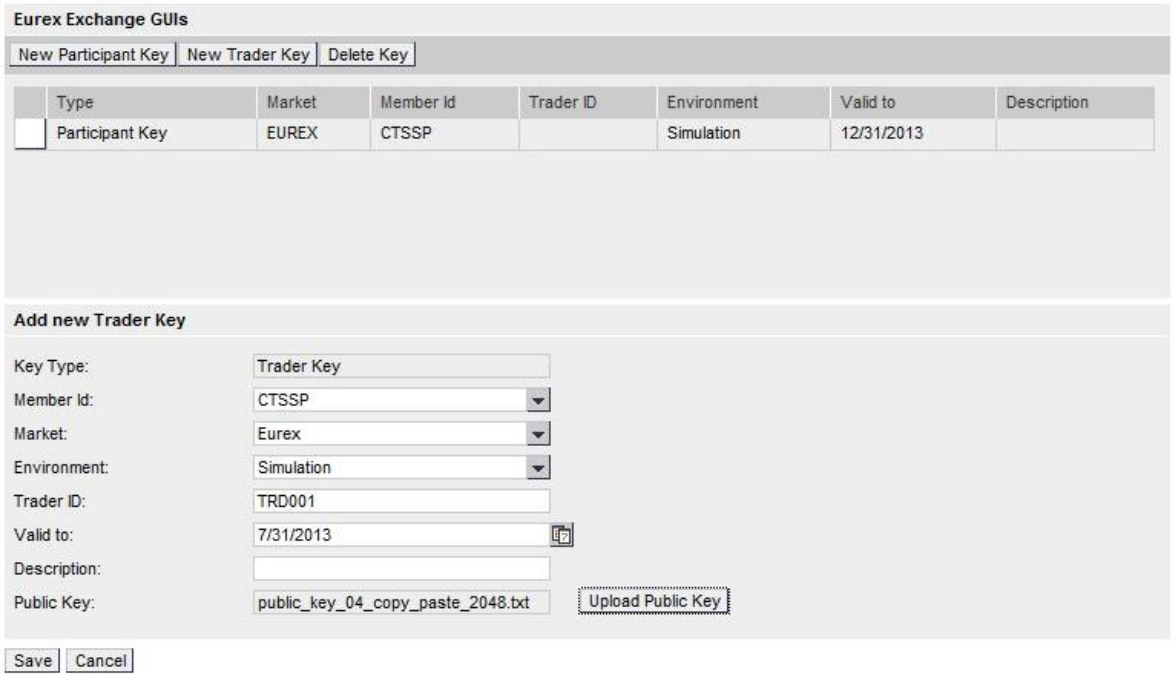
Uploaded keys will be activated and ready to be used within one hour after the upload.

4.3.2 New Trader Key

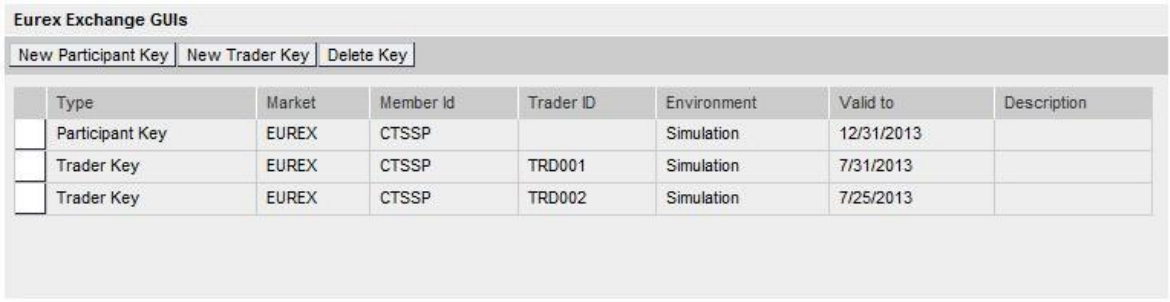
Click on "New Trader Key" if you want to upload a key which is used by one individual trader. Select the Member ID/Business unit, the desired market (Eurex), the environment (production/simulation) and choose an expiration date.

Expired keys will be deleted at the expiry date. Expiry dates can be modified at any time. Additionally an optional text description can be added.

Follow the procedure described in the previous chapter to select a local public key file and upload it.



Click on "Save" to complete the key upload. The screen will return to show a list of all already uploaded keys.



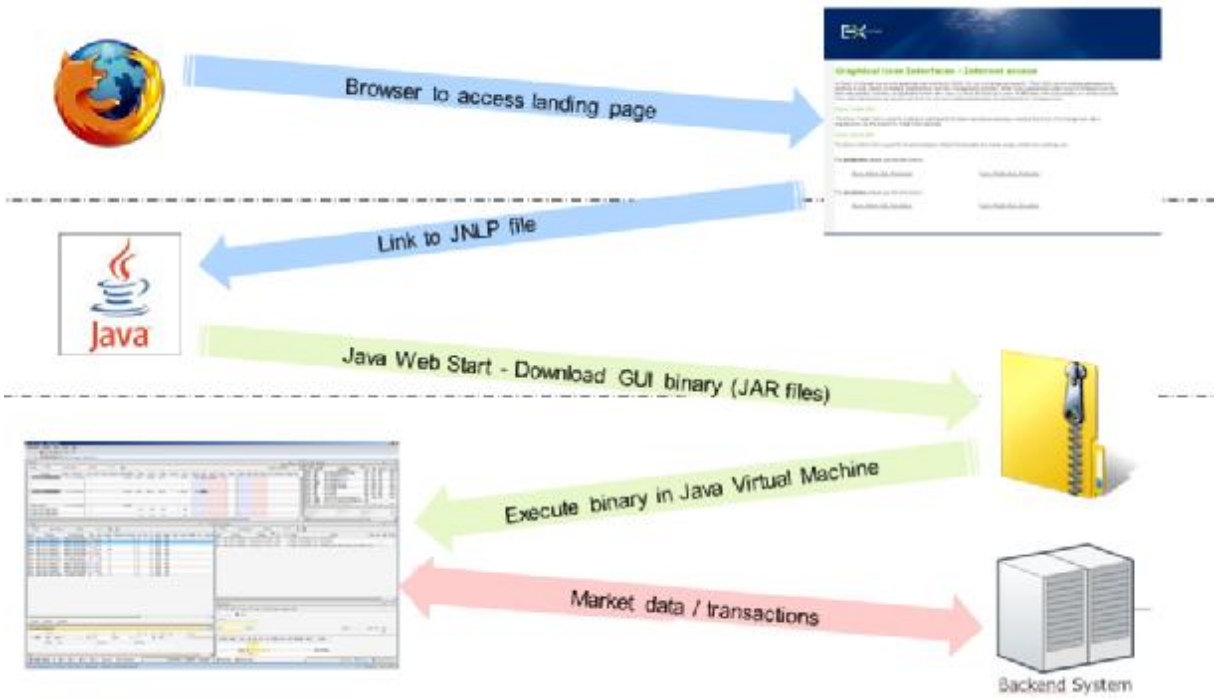
Uploaded keys will be activated and ready to be used within one hour after the upload.

5. Troubleshooting

Although the setup of the Eurex Admin GUI and/or Eurex Trader GUI is straight forwards and relatively simple, the following chapters give some advise on troubleshooting in case connectivity cannot established in the first place.

5.1 Three tiers of Eurex GUI communication

The whole process of downloading, starting and running the Eurex Trader and Eurex Admin GUI consists of three tiers:


Browser to access landing page
Link to JNLP file
Java
Java Web Start - Download GUI binary (JAR files)
Execute binary in Java Virtual Machine
Market data / transactions
Backend System

5.1.1 Tier I, Web browser -> landing page -> JNLP file

Any web browser can be used to navigate to the landing pages (Internet http://193.29.90.190 , leased line http://193.29.93.173). The GUI links on the landing page lead to JNLP files. If the mime type is set correctly to the javaws binary, a click on the link will launch Java Web Start. Proxy settings in the web browser are only relevant for accessing the landing page.

5.1.2 Tier I, javaws -> Web Start, JAR File delivery

The JNLP files contain information about the JAR files Java Web Start needs to download. This communication is still on port 80 to the same addresses used above. Proxy settings within the Java control panel apply here.

5.1.3 Tier III, Running GUI -> (crypto) proxies

The GUI will pick one of the (crypto) proxies listed in the JNLP file to open a communication channel which is then used further on for communication from the running GUI to the Eurex exchange:

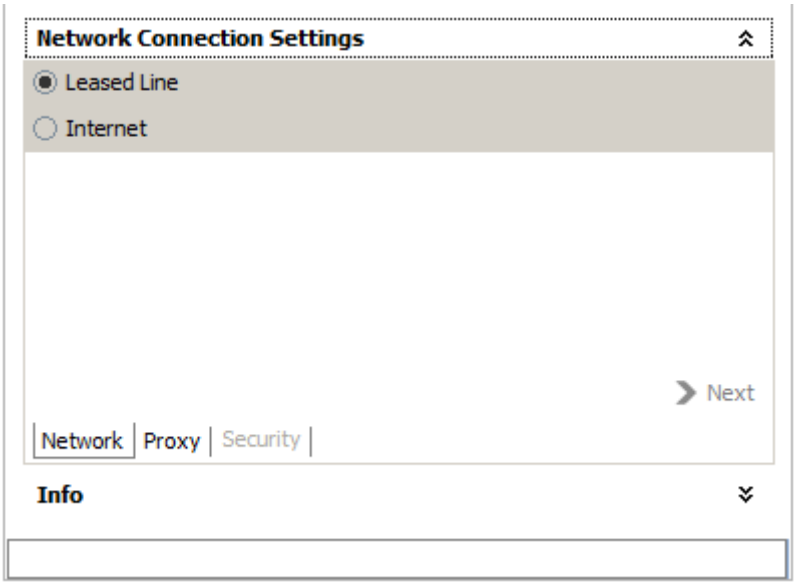
Leased line	Simulation: 193.29.89.224/28, 193.29.95.224/28 Production: 193.29.91.224/28, 193.29.93.224/28
Internet	Simulation: 193.29.90.224/27 Production: 193.29.90.192/27

5.2 Verify connectivity, Internet

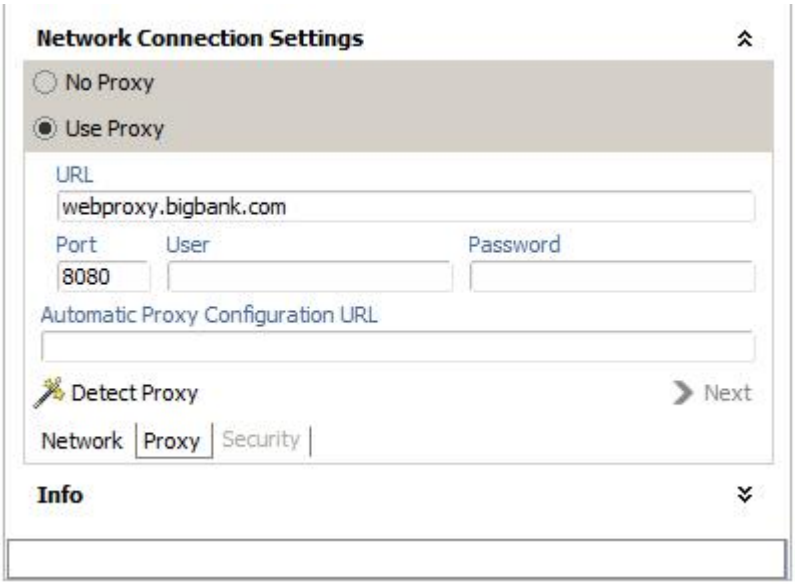
Open a web browser and navigate to http://www.eurexchange.com/gui. The landing page for Internet connectivity should be displayed. If not, verify that your browser can reach the Internet. Check local proxy settings.

Clicking on any of the presented Eurex GUI links will trigger the Java Web Start process. If not, verify the network settings of your Java plugin as described in chapter 2. If a local proxy server is present, this should be configured in the Java plugin as in the web browser.

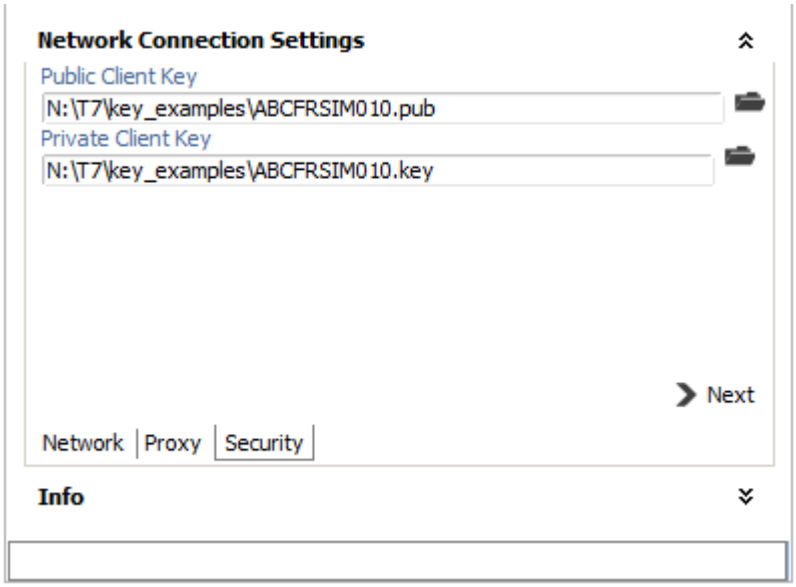
The Eurex Trader GUI or Eurex Admin GUI will start after the Java Web Start process has been completed. In the login screen, open network settings and select Internet.



If present, specify a local proxy server on the 2nd tab. If your proxy server requires authentication, please specify username and password for your proxy authentication too.



On the 3rd tab point to your public **and** private SSH key, matching the previously uploaded public key.



Clicking on the login button connects the Eurex Trader GUI or Eurex Admin GUI with the exchange. If not, verify the data entered in the network settings of the GUI.

5.3 Verify connectivity, leased line

5.3.1 Simple checklist for simulation network configuration test via leased line

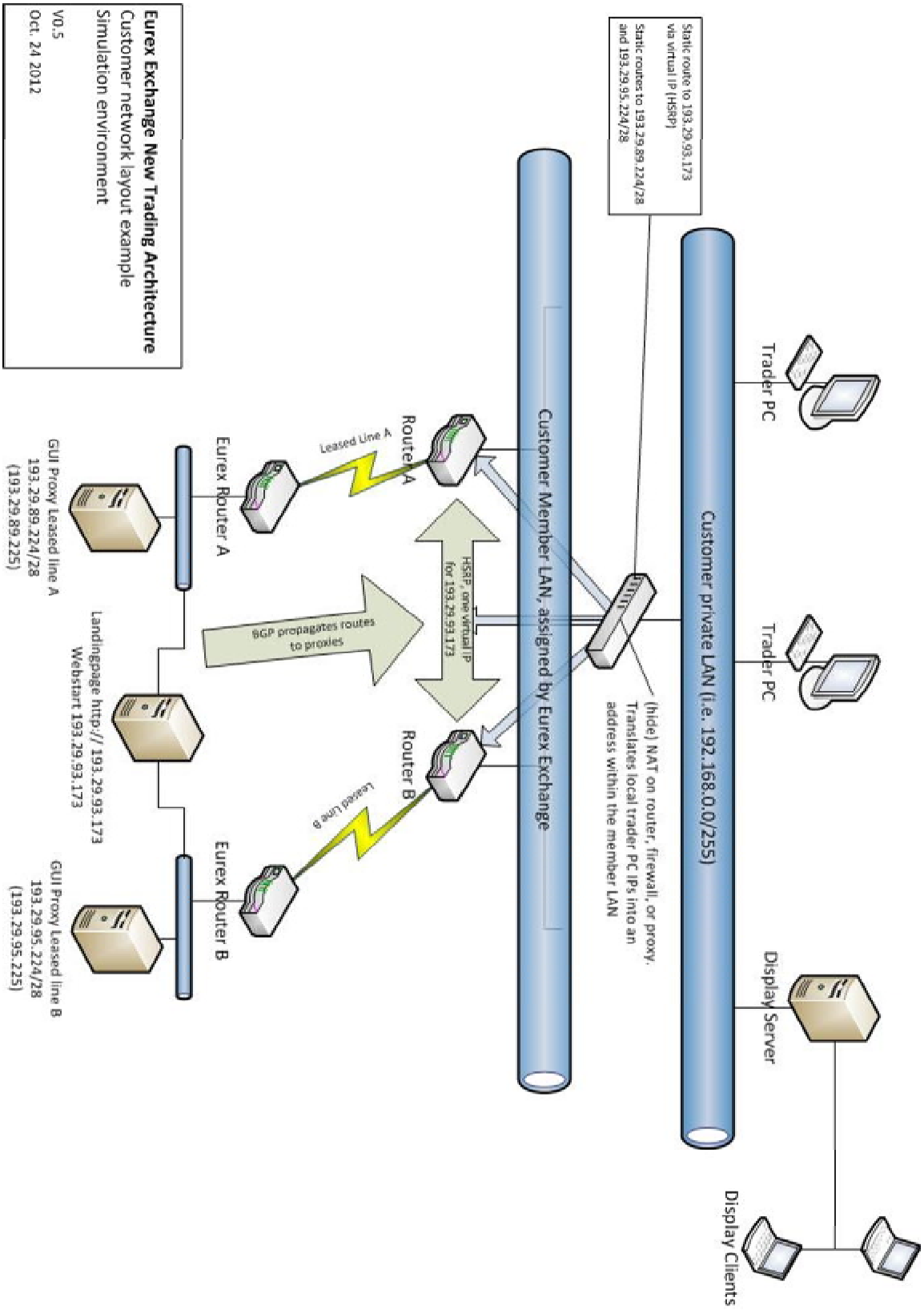
Please note: IP addresses below are for simulation only. See chapter 1.5 for production addresses.

1.) Find the correct member LAN to connect from: In the member portal, go to "Request & Configuration". Get an X-Con for ETI and/or GUI channel. Take note of the "MEMLAN IPnet". This is the network from which you should connect:
2.) Find the router assignment to back end half "A" and "B" in the same X-Con
3.) For initial testing put a computer into the assigned member LA.
4.) Add three static routes to this computer
route 193.29.89.224 255.255.255.240 -> pointing to router for BE half "A" (alternative subnet naming 193.29.89.224/28)
route 193.29.95.224 255.255.255.240 -> pointing to router for BE half "B" (alternative subnet naming 193.29.95.224/28)
route 193.29.93.173 255.255.255.255 -> pointing to either one of the routers or a virtual HSRP address.
5.) Test basic connectivity using telnet on the test computer
telnet 193.29.93.173 80 -> you should get an open port on a webserver
telnet 193.29.89.225 80 -> you should get an open port
telnet 193.29.95.225 80 -> you should get an open port
(use port 8089 instead of port 80 to test trader GUI on a dedicated GUI channel)
6.) Verify with the GUI software (only if the telnet tests above were successful)
Open URL http://193.29.93.173 in a browser on the test computer
Click on the "Eurex Admin GUI" link. -> Java Web Start will initiate, download the GUI and start it.
Provide a trader ID (ending with "_GUI") and a password. Make sure you enter letters in the password as **uppercase**. Click on "Login".
After a while reference data will be downloaded and the Welcome Screen of the Admin GUI will open.

If all above works, add HSRP fail-over for 193.29.93.173 if desired. Add NAT'ing device between Member LAN and trading floor network.

See chapter 1.4 for production environment IP addresses.

5.3.2 Example simulation network setup, leased line


Eurex Exchange New Trading Architecture
Customer network layout example
Simulation environment
V0.5
Oct. 24 2012
Static route to 193.29.93.173 via virtual IP (HSRP)
Static routes to 193.29.89.224/28 and 193.29.95.224/28
Customer Member LAN, assigned by Eurex Exchange
Customer private LAN (i.e. 192.168.0.0/255)
Trader PC
Trader PC
Display Server
Display Clients
(hide) NAT on router, firewall, or proxy. Translates local trader PC IPs into an address within the member LAN
Router A
Router B
Leased Line A
Leased Line B
Eurex Router A
Eurex Router B
HSRP, one virtual IP for 193.29.93.173
BGP propagates routes to proxies
GUI Proxy Leased line A 193.29.89.224/28 (193.29.89.225)
Landingpage http:// 193.29.93.173 Webstart 193.29.93.173
GUI Proxy Leased line B 193.29.95.224/28 (193.29.95.225)

5.3.3 Application test over leased line

Open a web browser and navigate to http://192.29.93.173. The landing page for leased line connectivity should be displayed. If not, verify that routes to 193.29.93.173 are present in your local network, pointing to your leased lines. Verify local proxy settings. If a local proxy is present and used by the web browser for accessing the Internet, ensure that an exception for network 193.29.93.173 has been created as described in chapter 1.5.1.

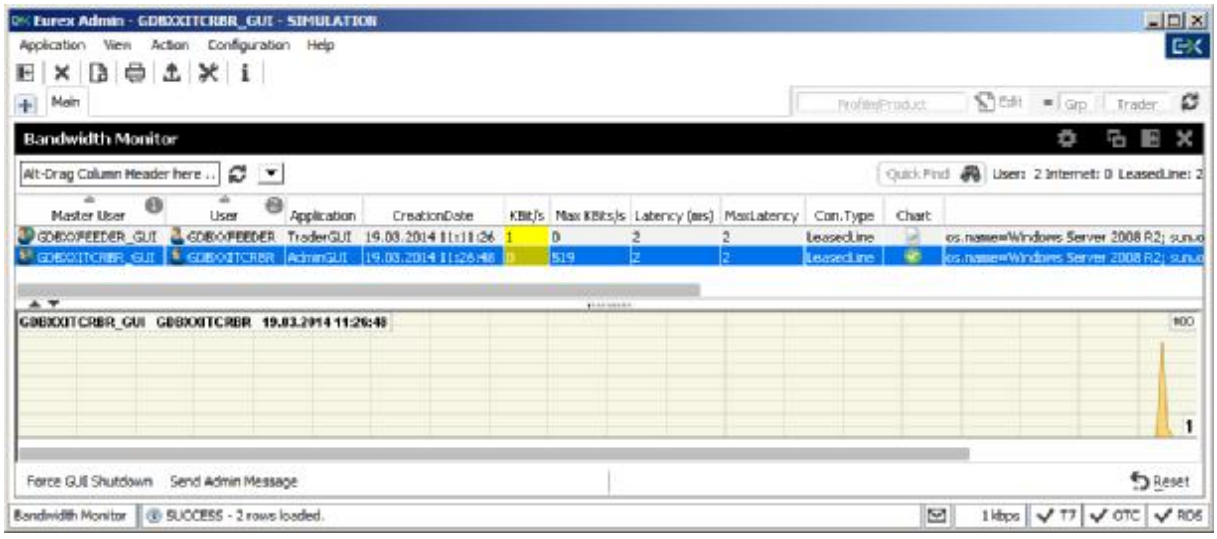
Clicking on any of the presented Eurex GUI links will trigger the Java Web Start process. If not, verify the network settings of your Java plugin as described in chapter 2. If a local proxy server is present, this should be configured in the Java plugin as in the web browser. Verify that routes to 193.29.93.173 are present in your local network, pointing to your leased lines.

The Eurex Trader GUI or Eurex Admin GUI will start after the Java Web Start process completes. In the login screen, open network settings and select leased line.

Clicking on the login button connects the Eurex Trader GUI or Eurex Admin GUI with the exchange. If not, verify that routes to the proxy addresses listed in chapter 1.5 are present in your local network, pointing to your leased lines. Note: you need to have routes set to both networks per environment if you use two leased lines for redundancy.

5.4 Bandwidth monitoring

Once connected to Eurex Exchange's T7, the bandwidth monitor view in the Admin GUI allows online monitoring of bandwidth usage and GUI latency for all users of within a business unit. Use the "Chart" checkbox to create a real time diagram of bandwidth usage per GUI instance:



Furthermore every running GUI displays current bandwidth consumption in real time in the lower right corner:

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5.5 General issues

Symptom	Possible causes	Measure
Eurex Trader GUI or Eurex Admin GUI does not start via desktop link.	Miscellaneous	• Start the Eurex Trader GUI or Eurex Admin GUI via the URLs described in chapter 1.4 which is the recommended procedure.
Java Web Start does not start; instead a .jnlp file is downloaded.	Java Web Start not correctly installed	• Verify Java Plugin version and installation according to chapter 2. The mime type of JNLP files should be linked to the Java Web Start executable (javaws) in your local JRE installation.
Java Web Start starts, but immediately shows an error. Eurex Trader GUI or Eurex Admin GUI does not start.	Application can not be downloaded or saved	• Ensure that you have write access to the temporary cache location and the disk is not full. • Ensure that the downloaded jar archive was not changed by an internal virus scanner.
Java Web Start starts, but the GUI JAR file is not downloaded.	Access to the GUI infrastructure at Eurex Exchange impossible	• Verify if the proxy settings of the Java Plugin match your network setup as described in chapter 2. • Ensure that no firewall is blocking the traffic to the IP addresses listed in chapter 1.4
Eurex Trader GUI or Eurex Admin GUI starts, but login is denied with error message „Wrong user or password" in "Master Login" window.	Wrong credentials for trader master account	• Ensure that the master login matches your trader id ending with "_GUI". • The master login password will be initially identical to your existing trader account login. Upon first login to T7 every user is required to choose a new password.
Admin GUI starts, but login is denied with error message „Connection error" in "Master Login" window.	Basic network connectivity between client computer and Eurex exchange servers failing	• Follow the network test procedures outlined in chapters 5.2 and/or 5.3 • Verify local proxy setting • Verify no firewalls are blocking relevant ports and all routes are set.

5.6 Java tools

A local Java installation will contain a number of helpful tools for additional monitoring in case of problems.

5.6.1 Java console

It is possible to monitor technical status messages of the GUI application by activating the Java Console. Select "Show console" or "Hide console" in the "Advanced" tab of the Java Control Panel to do this.

5.6.2 Monitoring and cleaning of the local Java Web Start application cache

Old and deprecated versions of the GUI software can be removed from the local cache using the Java Application Cache Viewer.

Windows: go to the Control Panel (**Start > Settings -> Control Panel**) and double-click on the Java icon. Select the "General" tab, then "Temporary Internet Files" and click on the "View..." button. This will open the Java Application Cache Viewer.

Linux: go to the Preferences Menu (**Preferences > Java**). Select the "General" tab, then "Temporary Internet files" and click on the "Settings..." button to open the Temporary File Settings dialog. Click on "View Applications..." to open the Java Application Cache Viewer.

5.7 Related Documents

Documents related to Eurex Exchange's T7 are available on the Eurex website http://www.eurexchange.com under the path:

Technology > T7 > System Documentation

The following documents may be of particular interest for user of the Eurex Trader GUI or the Eurex Admin GUI:

Document	Description
Participant and User Maintenance Manual	• A document assisting service administrators maintaining participant and user related data in Eurex Exchange's T7.
Eurex Trader GUI & Eurex Admin GUI – Manual	• A document providing a detailed description of the new Eurex GUI solutions, the Eurex Trader GUI and Eurex Admin GUI.
Eurex OTC trade entry	This document describes how to verify connectivity to Eurex classic from the T7 Trader GUI and gives advice on how to establish this connection should it not be there.
Network Access to Eurex Exchange's T7	• A document providing details on the network access options for the new interfaces of Eurex Exchange and Eurex Clearing. It includes detailed technical background information, such as router equipment information and port numbers for the configuration of firewalls.
User Manual – Request and Configuration	• A document providing help for the use of the tools available in the Member Section of Deutsche Börse Group. Please note, this document is available in the Member Section.

5.8 Contacts

For any questions you may have about GUI setup process please contact your Technical Account Manager using your VIP number or e-mail cts@deutsche-boerse.com.

For questions regarding the Member Section please contact the Member Section Team Tel: +49-69-211-1 78 88 or e-mail member.section@deutsche-boerse.com.

6. Change log

The change log serves as a record of the latest major changes.

No	Date	Chapter	Change
1.0	26 July 2012	-	Creation of document
1.0.1	23 August 2012	1.4	The port to access to the Eurex Admin GUI via leased line has changed from port 80 to 8089.
		3.3.2	Correction of the trader key from private to public.
1.1.0	29 October 2012	1.1	Landingpage URL
		1.4	Landingpage URL
		1.4.1	PAC Example
		3.2	PuTTYgen procedure
		4.1	GUI Screenshots
		4.2.1	New checklist for leased line connectivity
		4.2.2	New network overview
1.1.1	5 November 2012	1.4	Modified IP-subnet for access via Internet in simulation.
		4.2	Added note about the simulation vs. production addresses in the examples.
1.1.2	29 November 2012	3.0, 3.2	SSH passphrase mandatory for production and simulation environments
1.2	6 May 2013	1.4, 3, 4.1, 5	Proxy server details added, chapter 3 "Local files" added, screenshots updated, rewrote troubleshooting chapter
1.3	19 July 2013	All	Updated text and screenshots to reflect Eurex Exchange's T7 release 1.1
2.0	12 August 2013	1.4	Update for T7 release 2.0. Java 1.7 optional.
2.0.1	12 September 2013	1.4	Added latest Java RT 1.7.0_40 as recommended.
2.0.2	11 November 2013	1.4	Java 1.7.0_45 as recommended, 1.6.0 end-of-life, known issues with 1.7.0_25
2.1.0	19 March 2014	All	Updated for T7 release 2.1 (in particular 1.2, 1.3 and 1,4)